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The mobilities and post-mobilities of cargo

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Keywords
cargo, post, mobilities

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Keywords

3D printing,
cargo,
global consumption,
mobilities,
networks,
supply chain

1. Introduction

Away from the aesthetics of the city (Monin and Sayers 2006), the fashion models (Parmentier and Fischer 2011), the high street (Warnaby 2012), Christmas (Kimura and Belk 2005), logos (Penaloza 1998) fantasies and consumer desires (Wilk 1997; Fitchett 2004) are mobilities that are cordoned off from consumers and marketing, and are not part of either's worldview or core concerns. These are forgotten spaces where neither high street shoppers nor marketing executives dare to tread. Sprawling concrete docks filled with new cars awaiting delivery, 10 ton containers stacked on top of each other with Lego-like precision, vast transoceanic ships plying the oceans, flows of cheap and disposable objects across the seas, imploding post-manufacturing cities in the rich North and labour exploitation in the poor South – these are all ordered elements in the relatively disorderly contemporary system by which consumer objects are manufactured, containerized and moved to consumer markets as cargo.

Consistently energizing the social sciences over the last decade, the study of mobilities signals a new framework for contemplating how societies move (Sheller and Urry 2006). The advocates of this paradigm were amongst the first to describe the social impacts of the automobile, the aeroplane, tourism and the mobile technologies of the city (Hannam, Sheller, and Urry 2006). The intention of this paper is to also consider the “orderly disorder” of cargo to explore an emerging domain of interest across a range of different disciplinary specializations: geography, anthropology, sociology and transport studies.

This paper surveys the logistics of distribution and the “forgotten spaces” of the ocean, the port and the containerization system. It takes on board the fetishizations, social movements

and cults of consumption that operate globally in order to encourage the movement of ever-increasing amounts of cargo drawing on previously unpublished colonial accounts of cargo cults. Additionally, this paper examines the geopolitics of in-betweenness, the processes of offshoring and the resources that allow consumption to move. We show that thinking about cargo through these currently separate disciplinary threads also has significance for consumer and marketing research. Lastly, various freight futures are considered according to mobilities and post-mobilities generated from a strategic foresight exercise with experts.
The ultimate aim of this paper is to encourage reflection on the making and movement of the material world in terms of the relationship between cargoes and markets in the spirit of this special issue on "moving consumers." This contribution seeks to engage with cargo through the mobilities paradigm by examining how large and secretive structures outside of the consumer's (or marketing executive's) areas of concern are involved in making materiality happen. In the case of the container, consumer demand for readily replaceable and mass-produced objects, which the cargo "box" encloses, is satisfied by vast extended and networked infrastructures including ports, roads, supply chains, satellite communications, Internet-enabled information flows, tagging and labelling technologies and automated machineries (Cidell 2012; Martin 2013; Parker 2013). These came together to provide a profound shift in the movement of products to market (Schwarz 2006).
Cargo – both in supply and in demand – is now a seamless way of life where the consumption of large volumes of goods by consumers in the Global North (most of which are moved from the poor Global South) is normal and where states have played to the tune of a global market economy through trade and financial deregulation. Without the key innovation of the standardized, automated and reinforced cargo container, and the complex and long-chain systems of containerization, the global economy and modern societies would be unrecognizable (Cudahy 2006; Levinson 2008). Similar to a theatre performance, containers, material goods, ships and cargo ports occur behind-the-scenes while on stage and in full view are markets, creative outpourings and the myriad of goods central to the lives of various cultures of consumption – all boxed, packaged and waiting to enchant those who unpack them. This "magic system" is an extension of a post-Second World War innovation: the shipping container and the standardization in infrastructure it depended upon, as well as the network nodes, such as cities, which continue to bid against each other to be located upon the container network (Fowler 2006).
This paper examines the history and future of cargo as the culmination of three currently separate domains: the forgotten space (distribution), the magic system (marketing) and the consumer "cults" at the core and the periphery (consumption). The paper proceeds to evaluate the future of cargo according to different tempos of mobility in four freight futures. This paper uses futures scenarios as a method to bring to the fore the mobile-rich (yet recently ignored in marketing research) world of containerization and global freight. By thinking through what we term cargomobilities, parallels can be drawn with other big systems of the twentieth century: automobilities and aeromobilities. These systems include a number of other key elements ranging from culture, status, emotions, bodies and cults of consumerism (Cwerner, Kesselring, and Urry 2009; Dennis and Urry 2009).

2. The forgotten space

Examining the container through the mobilities framework allows a wider prism of analysis, taking into account not only the contents of the box and the materials on the move, but also the systems making it work efficiently and with the appearance of ease. Cargo has become such an intrinsic part of contemporary life that the effort involved in bringing objects to

consumers apparently entails little more than the click of a button for an online order with a negligible charge for shipping, or a visit to the local mall where the item is held “in stock.” However, easeful transoceanic shipping is complicated by geopolitics and the politics of proximity (Pellegrino 2011). Principal trade routes for container cargoes include the Strait of Bab-el-Mandab, the Strait of Hormuz, the Strait of Bosporus, the Panama Canal, the Suez Canal and the Strait of Malacca. Approximately 60% of world oil trade is shipped in more than 4800 oil tankers through these passages (Li 2011). Many of these byways are “choke points” between hostile regions, which the current system of international container traffic can only sometimes navigate safely and securely. Oil is crucial for all container cargo yet the resource's future is far from certain (Urry 2013). The amount of fuel carried by container ships is around 14 million tons, compared to 130 million tons carried as cargo by oil tankers. Some container ships carry more bunker fuel than oil tankers carry as cargo not including the ‘embodied’ oil, which container goods are made of and with (Zhu 2007). Despite economies of scale, the cargoes of global trade thus have a significant transport component, making consumer supplies acutely vulnerable to oil supply disruptions, similar to the petrol market (ITPOES 2010).

Before oil (diesel) became the main source of power in containerization, pack animals, sailing ships and freight trains carried both passengers and cargo using muscle, wind and coal. Steamships became a crucial element in international trade with the “east” in the late nineteenth century due to their capacity for consistent long-distance haulage. The Suez Canal emerged as key to the British Empire as steamships became the dominant form of ocean transport, principally because sailing ships could not pass through such narrow straits. Steamships could traverse open seas as well as narrow passes through key regional geopolitical shortcuts and this advantage proved to be a window of opportunity for a socio-technical transition from sail to steam: early ships in this transition sported both sails and stacks for a time (Geels 2002).

The international shipping of bulk resources and manufactured cargo underpins the cargomobility system. The container vessel emerges from the merchant navies of Great Britain and the USA in the Second World War to cater for demand for oil and cargo in remote theatres. One important transition tipping point was a shift from the shipping of raw resources for manufacture to the shipping of manufactured objects as cargo.

The Merchant Marine Act of 1936 is normally regarded as a pivotal moment in tracing the container's move from a niche innovation into the cargomobility system. After the Second World War, the entrepreneurial shipping magnate Malcolm P. McLean – a Henry Ford-like heroic innovator of cargo – who made his fortune in the Pan-Atlantic Steamship Company, purchased a pair of modified tankers that had been used to haul heavy military equipment from the USA to Europe. McLean challenged conventional steamship wisdom and chose the much larger class of tanker for their scale and the pre-existing wartime retrofitting made in order to carry military trucks. He figured they could also bear cargo containers of similar shape and build as long as ports could also be standardized.

Containerization is a system of movement and at its core are four elements: standardized handling, faster movements between terminals, faster transfers at terminals and a control system (Asperen 2009). McLean is credited with setting off the container system through his 1958 patent for an all-weather truck-trailer body especially reinforced for oceanic cargo; he was the father of containerization (Raj and Raj 2009). His patent makes clear his intentions to ship in bulk mass-produced items: “A major impediment to transoceanic trade resides in the relatively high cost involved in moving small shipments of merchandise” (McLean 1958, 1).

A major impetus here was the attempt to undermine trade union organization within the docks and ports around the world. Between 1946 and 1961, New York and London faced

severe disruptions as a result of trade union strikes. Unions were concerned about unsafe work conditions and the respective governments made counter-allegations of organized crime amongst dockworkers. In London, stevedores found themselves pawns in a war of attrition between a hostile central government and a militant trade union leadership. In New York, racial discrimination against some longshoremen provoked a social movement that similarly impacted upon the delivery of goods to customers (Davis 2003).
Containerization offered a dramatic solution to these crises by offshoring, at the expense of local labour and pre-existing industries and infrastructures. This was a key moment in the history of moving consumption. International containerization transformed the global economy through making objects much more affordable to ship, buy and dispose of. Shipping became relatively costless. In 1961, ocean freight costs accounted for 12% of the value of US exports and 10% of the value of US imports. Selling internationally was in many cases not cost-effective and so consumption was limited by delivery costs and choice (Levinson 2008). Moreover, the cargomobility system would not have become dominant if McLean had not had the foresight to forego a patent for the modular, enclosed and stackable container, so bringing about much greater standardization between competitors (Cudahy 2006).
A critical milestone in globalization is the box that changed the world. This is momentous for consumer capitalism in the Global North as it developed during the neo-liberal period since the late 1970s (Donovan and Bonney 2006). Vast ships have now replaced the equivalent of 20 miles of trucks and can deliver a car for less than 500 dollars anywhere in the world (Chanda 2007). The cargomobility system's economies of scale afford the offshoring not only of physical infrastructures but also reduced labour costs, weaker environmental regulation and lax worker safety laws. These elements make up the cargomobility system today, central to the hegemony of global capitalism and the intrinsic connection of material production and consumption to markets and economic growth. There is something astonishing for many in the Global North as they access an amazingly wide range of material objects arriving in their houses from the other side of the world to be consumed and disposed of at a whim with paltry apparent consequences.

3. Cargo cults

McLean patented his container in 1958 and it was approximately at this time that an awareness of what became known as “cargo cults” – religious responses to this escalating containerization – emerges on the periphery of the global economy. These cults bore witness to a rapid intensification of global consumerism and free market ideologies. Indeed, reports in anthropology about distant imaginings of consumption are invaluable in documenting how cargo came to have such intensive motion (Ekström and Brembeck 2004). It is the fetishization of cargo across the world as well as the development of containerization that are key elements of cargomobilities.
The BBC reported in 1956 that in Papua New Guinea (PNG) local people had been taken by a “madness” (The Listener's Book Chronicle 1956, 692) where “under the influence of crazy prophets, they threw all their possessions into the sea and waited for a magic cargo to arrive, full of all they required” (The Listener's Book Chronicle 1956, 519). Some of the earliest accounts of cargo cults feature in post-war colonial government assessments of local people's interpretations upon witnessing the large amounts of military equipment and supplies shipped into Melanesia during the Second World War in the embryonic cargomobility system:
A particular native will announce that he has a dream or a vision in which he is informed that his ancestors will be returning and will provide large quantities of cargo by ship or plane,

that there will be no need to work in the future as the monopoly of white men over the source of the supply will be broken, and often the natives concerned will take action to destroy their existing gardens, houses and other possessions in anticipation of all the good things in life. (Australian Government 1947, 8)

For aspirational consumers on the edge of such an apparently "magic" system, cargo meant not only the desirable material cultures delivered through the colonizers, including "planes, ships, bulldozers, sheet metal, money and the good food available at the stores," but also "beyond the flood of objects the coming of cargo also signified that the native would live on par with the white man. It meant power" (Schwartz 1962, 268). The international media and academic researchers reported that remote villagers in PNG were rejecting traditional gods for symbolic rituals with wooden carvings of jeeps, weapons, planes, mock runways and later even containers to invoke the powerful magic of consumer capitalism. Colonial authorities, and indeed the world's media, saw cargo cults as little more than a combination of "ill-digested" knowledge and "a completely wrong idea about the value of things" (Australian Government 1947, 9).

For indigenous people, cargo was a message from the ancestors telling them to anticipate their future involvement within this system and indeed possibly the co-opting of the source of colonial power, namely material wealth. Unlike Europeans, the offshored elements some of the infrastructures of the cargomobility system were exposed to the view of these local people as cargo moved through their worlds:

All that natives saw was the arrival of ships and aircraft, which unloaded huge quantities of cargo at the wharves and aerodromes. As the Europeans obviously had not contributed to the total operation of secular labour that might normally have been expected, the only possible conclusion was that it was carried out entirely by a deity who was helped by the ancestors and was under human direction. (Lawrence 1964, 249)

And so these cults around cargo were not "simply due to a misunderstanding concerning the origin of manufactured goods," rather, they were keenly prescient (Burridge 1970, 246). The sudden access to vast amounts of cargo, appearing by magic in colonial ports, was interpreted as a millenarian omen confirming the sermons of Christian missionaries preaching at this time in the region. The almost hysterical excitement in cargo cults about the appearance of objects delivered by the cargomobility system chimed well with the heightening of consumer desire at the same time elsewhere in the world. Rather than ill-informed outbursts on the periphery, these early cults were canaries in the coalmine for a much larger cargo cult of consumers charmed by the magic system of marketing in the Global North. Cargo cults showed a remarkable sensitivity by people outside the system (or so it was thought by some commentators) to a systemic transition in action. Ethnography on cargo cults is a valuable window into the social transformation of consumers by the cargomobility system and it also makes clear that cultists eventually did join this system, becoming "cargo people" and involving themselves in global trade through selling cultural artefacts by the container-load. Unfortunately, as experienced elsewhere, newly acquired cargo, swapped for carvings, lead to the unhappy ending that just one load of cargo will not satiate desire (Jebens 2004).

Soon after the advent of the early cargo cults on the periphery came many other consumer-driven cargo cults around the world all seeking to satiate the desire for more cargo. The idea of "the cult of acquisition, the cult of the consumer" came to the attention of concerned social commentators, witnessing the "bombardment of young people by advertisements of all kinds urging them to buy [and] the building up of the 'teenage ego' for this sole purpose" (Gregg 1967, 287). John Kenneth Gailbraith's The Affluent Society powerfully criticizes the underlying logic of this new system of consumer cults afforded by easeful consumerism: "So it is that if production creates the wants it seeks to satisfy … then the urgency of the wants

can no longer be used to defend the urgency of the production" ([1958] 1998, 125). It was an apparently mystical system that provided these many wants with the promise of unending possessions through the secretive and seamless technologies of containerization.

4. The magic system

The short description of the pattern we have is magic: a highly organized and professional system of magical inducements and satisfactions, functionally very similar to magical systems in simpler societies, but rather strangely coexistent with a highly developed scientific technology. (Williams [1980] 1993, 422)

In cargo cults, objects appear and disappear as if by magic. Indeed, the secretive disappearances and appearances afforded by global freight and offshore worlds are vital in making this system seamless and effortless to consumers (Blinder 2006). Taken offshore are not only physical goods but also enclosed and bounded symbolic containers of labour, taxes and emissions of greenhouse gases (GHGs). And for consumers of cargo in the Global North the appearance of objects out of the air, separate from environmental impacts, social costs and GHG emissions, are a taken-for-granted product of contemporary capitalism, despite many foreseeing this as leading to various catastrophes within the twenty-first century (Urry 2011).

Understanding consumers and containers as concomitants within the cargomobility system is important for assessing material cultures. Cargo delivered through the innovation of the container is indeed a form of magic, using Williams's term, where the politics and consequences of production are set apart from the material cultures of consumption. Despite how things appear in the fantastic system of consumer marketing, the majority of consumer products in global markets are neither made, nor do they move, as easily, smoothly and effortlessly as marketing would have us believe: they must be freighted about with great effort as cargo by the scientific technology of distribution.

It is necessary to underline here that the container, and the complex system it is a part of, was not the trigger of global trade and Williams's magic system. Rather, the abundant material resources appropriated by powerful corporations enabling cheap goods to be produced and shipped vast distances in bulk came to make the container, like the car, so world-changing. What needs to be accounted for is that the container and its cargo are just as significant as the automobile or the aeroplane for issues of energy use, emissions targets and environmental impact. For example, in the official accounts of national energy use in the UK, car travel appears as the largest source of emissions, but when production and transportation of objects are factored in, then the emissions from "stuff" considerably dwarfs travel (MacKay 2008, 94). Emissions from the consumption of goods and services are under-emphasized in international attempts to develop a roadmap to limit GHGs. In 2004 19% of the CO2 emitted to support the production of goods and services consumed in the USA was emitted outside of the USA while 28% of China's territorial CO2 supported the production of goods and services consumed outside its borders (Caldeira and Davis 2011). In essence, while China is leading the world in its GHG emissions, this is in part through making and moving cargo for the Global North's magic system to market (Walsh 2010).

Consumption is not just about brands, creativity, marketing, sentiments, experiences, designs, trends, fashions and retail spaces: global production networks match up things with a global culture industry (Lash and Lury 2007; Amis and Silk 2010; Coe and Hess 2013). As Williams was deeply aware, the magic system obviates critical problems posed by "the factory of advanced machines" which requires "smooth and steady distributive channels" by ensuring "definite indications of demand" (1993, 422). Yet what this system has led to is an obscuring and glossing over of how products actually move through space to consumers in

favour of research on consumer marketing and the economies of signs (Lash and Urry 1994; du Gay 2004). This potent magic system, by adopting the hallmarks of ease, readily implies that the ways objects are moved is of little consequence; however, alternative modes of production are now inspiring new cargo cults where customization, bespoke crafting and localized making represent the possible development of manufacturing and movement in a post-container system.

5. Freight futures

The final section of this paper draws on one of the author's experiences in the UK Foresight programme and both authors' experience with strategic foresight in a workshop on the future of freight in London in 2012 with the Futures Company, 25 engineers, consultants, policymakers and designers. An example helps to illustrate the usefulness of futures work: prior to the home computer revolution, strategic foresight was predicting that "microprocessors will be involved in such ordinary daily tasks as the purchasing of goods, the treatment of medical ailments, the driving of an automobile, and the use of leisure time" (Nichols 1980, 129). The explicit concern of this workshop was the creation of four scenarios to map out distinct "worlds" encompassing issues on consumption, marketing and distribution. Tried-and-tested strategic foresight techniques were used in this workshop and the approach is complementary to three past foresight exercises on the automobile, climate change and, most recently, oil (Dennis and Urry 2009; Urry 2011, 2013).

The first future world is called "Bigger Boats" and represents business-as-usual: increasing economic growth, energy use, more transportation and higher volumes of cargo. In line with the predictions of annual reports, the biggest freight companies, such as Maersk, have committed to a future involving the expansion of haulage capacities. Global production networks with supply chains spanning across territories proved to be a model hard to beat. In this future, growing economies of scale in the Global South's manufacturing sectors are matched by innovations in transportation and energy, as well as climate and technology "fixes" to support increasing levels of consumption in the Global North.

The societies in the Global South – where these bigger boats travel to and from – at the centre of the roaring nineties' hysteria around an Asian Century have not followed the script and remain excluded from cosmopolitan cultures with visible material wealth and accumulation of manufactured objects at their core. No technological fixes or intergovernmental cooperation arose to combat poverty and inequality globally. The emerging countries instead remain poor and the rising tide has not lifted all boats, only those that transport goods to the Global North.

The hype around the emerging powers was based in hindsight on unsustainable growth and could not weather the financial doldrums of the late 2000s. The "flattening" of the world predicted by some commentators did not eventuate, hence manufacturing did not return to the Global North as imagined in the early twenty-first century; therefore, consumer products remain intrinsic to the cosmopolitan identities of the citizens of the Global North and only as an aspiration of the so-called middle classes in the South.

The major freight companies' projected strategies to increase economies of scale have further resulted in bigger cargo ships guided by advanced telecommunications systems allowing just-in-time deliveries and larger, more complex ports and logistics. The opening up of the Arctic sea-lanes through the seasonal melting of the polar ice has ensured more efficient flows of material and new markets for it. Low incomes in South America and Africa have spawned manufacturing renaissances in these regions on par with South East Asia, which remains the world leader for production innovation.

Cargo, and easy access to it, has become a foundational right in this hypermobile world. Manufacturing innovations did not result in a new industrial revolution substituting for travel, but has instead provided many more innovative products, production systems and efficiencies in prototyping: more freight. Innovations in advertising and planned obsolescence have further fuelled insatiable appetites for consumer cultures.

The magic system has become even more persuasive with advertising companies able to accurately predict consumer trends, fashions and therefore invest in these accordingly. Social status hinges on high levels of luxury consumer goods and the long-distance transportation of these objects supports the incomes of the people who make this happen. Societies in this future are highly unequal in class and gender, and recurring cargo "cults" of all kinds provide citizens in the Global North with various distractions. These trend-based product cycles produce more cargo while in the Global South cargo (or lack thereof) is a source of protest and citizen uprising.

The second future is called "Onshoring" and involves engineering innovations causing substitution for long-distance freight. There is now an onshoring drive back to the Global North through the widespread adoption of additive manufacturing alongside other high-tech industries reversing offshoring to manufacturing centres.

A manufacturing renaissance has occurred in what was the post-industrial Global North, and a flattening of regional inequalities has led to some parity in global incomes for the now-burgeoning middle classes in the Global South who now have their own creative economies and hubs for cosmopolitan living. People use 3D printing in a consumer utopia (Birtchnell and Urry 2013; Naughton 2012) as much as they desire in their homes for simple, non-critical objects and use local shops along with online services for more materially complex objects without concern for energy use or GHG emissions from the conventional and unconventional fossil-fuel resources that are converted into printer materials. Oil shipment from the Middle East and other key suppliers has proved to be less favoured than the use of existing coal, shale and tar-sand reserves for printing materials.

"What you want whenever you want" is the mantra to live by in this future world of reduced freight but regionally spread-out manufacturing. Government subsidies in technology in the hope of reinvigorating regional manufacturing agree with predictions that "manufacturing sites can be local to cities or even neighbourhoods" (Rosen 2004, 43).

Technology has made this onshoring industrial revolution happen as some analysts foresaw in the early twenty-first century: a boom for countries experiencing collapses in resource booms, such as Australia (Roos 2012). Outsourced manufacturing has returned from China and other countries in the Global South who now no longer hold a monopoly over production and whose products have lost favour with consumers in the Global North craving consumer-controlled and locally made objects with minimal transportation costs supportive of regional employment. Energy-intensive non-manufacturing industries such as inventories and logistics have upscaled to moving resources and materials as well increasing regional (road and rail) freight.

Smart (energy and GHG-intensive) manufacturing has enabled post-industrial countries to be competitive and shift manufacturing away from mass-produced, cheap, disposable items to regionally produced expensive, bespoke and innovative commodities. An industrial revolution has happened around regional manufacturing in this future world as some experts foresaw early in the twenty-first century (Lipson, 2011).

Sea-lanes and port infrastructures are now principally reserved for flows of raw resources from oil and mineral-rich regions to those who depend on them for localized manufacture. Containers are even more standardized with the specifications of 3D printer cartridges setting the basic dimensions of haulage technologies. Geopolitics is no longer about producing (developing) and consuming (developed) countries but is instead concerned with the

resource-rich and resource-poor. Resurgence of both nationalism and environmental protest is occurring regionally due to the expansion with the use of non-conventional sources of oil (tar sands, shale and “fracked” [fractured] gas) for manufacturing materials.

The third world is called the “Internet of Things.” In this world, advanced manufacturing technologies such as robotics, additive manufacturing and nanotechnology have moved from being niches to becoming enablers of manufacturing in the Global North. This rejuvenation of long-lapsed industrial hubs has generated excitement for local brands, regional manufacturing identities and investments in STEM subjects. This transition has been significant for nations and cities, as cores have opened up to small-scale manufacturing and boutique consumer-friendly production centres (Puentes and McFerrin 2012, 12).

This is a future world of energy efficiencies and emissions reductions – of post-mobilities – combined with windows of opportunity for innovations such as 3D printing to make cargo locally and without long-chain transportation. Economies of scale have disappeared in sectors of the manufacturing industry due to mass-customization possibilities of distributed local 3D printers in homes, stores, warehouses and boutique factories. Cargo is recycled locally where possible and is made into more printer material for reuse. Consumer, corporate and governmental interest in reducing GHG emissions and energy from the transportation and distribution of objects has led to government-subsidized companies using high-end 3D printers alongside network technologies and digital design repositories to meet consumer demand for just-in-time “stuff” (Miller 2010). Customers can now also self-audit their freight transportation emissions and the environmental impacts of their use of materials through “smart” meter consumer systems. In this world, digital bits seamlessly become physical atoms, leading to consequent reductions in regional labour cost advantages, income inequalities and detrimental environmental impacts.

Cost of entry into the business of manufacturing has declined and the quality of a continuous stream of ideas has eclipsed the scale of manufacturing in bulk. Although regional restrictions on copyright violation and piracy are even more rigorously enforced, intellectual property has not sufficed to protect mass manufacturing industries as products can now be 3D scanned and reverse engineered to be produced anywhere with 3D printing. Innovators and inventors are able to get goods to market faster, therefore making competitive advantages between regions even more short-lived than in the past. 3D printing “evangelists” are also bidding for and winning considerable funding from governments to start up centres to promote and develop linkages with private and community sectors.

As consumer demand for affordable printing increased, economies of scale for new systems of shopping did so as well. The speed with which rapid prototyping has emerged as an alternative method for making things, coupled with advances in technology over the last few years, has inspired some experimental communities to realize alternative currency systems around bartering and “wealth without money” (Bowyer 2010). In this future, the Internet of things not only emerges from multinational corporations, but also, like the computer revolution, from small start-ups and entrepreneurs.

A number of significant hurdles have been overcome allowing additive manufacturing to trump sea and air cargo. The aesthetic appearance of 3D printed objects now looks normal straight from the build-tray through greater print resolutions and material innovations. Conventional design software has become easier for non-technical users and open source. Three-dimensional printing compliant materials, while remaining more expensive, have benefitted from both economies of scale and efficiencies in additive manufacturing and consumer purchasing. 3D printed exotic materials within customized objects can now be recycled and disposed of safely and as part of circular product life cycles. Furthermore, mass customization has influenced the emergence of new markets for printed products in the same fashion as digital music and literature.

The fourth future world is called “Make Do and Mend.” This is a world of reduced GHG emissions and energy use with concerns for energy supplies triggering a more widespread powering down of societies. Alongside reductions in individual travel and self-sufficiency is a dramatic falling in global flows of cargo and a preference for low-tech solutions to the procurement of objects. In this world, craft skills and recycling programs are sites of rhetoric and political lobbying as those in power seek to inculcate these practices as virtues amongst the citizenries of the Global North.

During the Second World War, the British Government's war footing on its home front included a consumer campaign discouraging demand for luxury commodities (tobacco, cotton, electronics, chocolate) – instead encouraging home farming, repair and reuse and other forms of “make do and mend.” This was a dramatic response to the island's rapid de-globalization due to embargos enforced by Germany's submersible U-boats and port stockades. A significant aspect of this future is backlash against the cargomobility system, perhaps as part of a lapse in globalization, in the same fashion as during the home front – this is then a future where “make do and mend” and a “New Home Front” is given more precedence than the urge to “fill the ships and we shall fill the shops,” a sentiment underpinning the globalized consumer cultures that dominate the Global North today (Birtchnell, 2013).

So this “New Home Front” entails a lapse in globalization as realization of the enormous threat of climate change occurs and as energy costs eat into the profits of mass manufacturing and containerization. The auditing of cargo emissions in terms of regional responsibilities rather than merely outputs laid bare the contribution of this sector to climate change. Growth in some areas of the cargomobility system caused crises in others: attempts to make container ships bigger made them incompatible with urban ports, which were unable to expand as rapidly and without protest by austerity-hit citizens, who were expected to foot the bill.

Backlashes around the expansion of the cargomobility system counteracted any technology “fixes” that emerged in the manufacturing sector and the demand for slower pace living, more well-being and reduced personal debt undermined global consumer cultures and cosmopolitan identities. Networked technologies allowed people to work from anywhere and saw a rapid depopulation of urban centres for rural living, reversing trends of the twentieth century, accompanied by reduced consumer spending, more self-sustainability, community farming and craft production. In this future, individual identities and personal pride are invested in a small number of relatively expensive and bespoke objects produced locally, retaining localized meanings and design motifs. Skills in repair and reuse are celebrated and nurtured as part of community support initiatives that also serve as social sites. Shopping and retail solely occur in farmers' markets, thrift and charity stores where robust and reliable objects are highly sought after.

6. Conclusion

Consumption and markets are inconceivable without reference to distribution and logistics and the geopolitics of in-betweenness. An attention to mobilities brings these relationships to light. This paper has sought to summon a new strain of research within the mobilities paradigm on cargo and its movement between very different domains from the periphery to the core: manufacturing, distribution, marketing, consumption and so on. We considered the historical emergence of the cargo container system as it came to be utterly essential within the second half of the twentieth century. The second half of the last century saw the container develop as a central element in the global manufacturing and movement of material objects; this process was part and parcel of the intensification of capitalistic

geopolitics that saw a heyday in the “roaring nineties.” Online retailing, consumption and finance all came to depend upon the material aspects of the consumer world being screened from view. A huge cargomobility system was set in place in order that mass manufacturing and mass consumption appeared seamless and effortless as portrayed in the glib promises of much advertising.

Nothing in this futures analysis suggests that the die is cast for the dominance of this cargo system. Cargo will surely exist in a post-mobilities world, even if it is to be extruded from a 3D printer's nozzle. One significant issue we highlighted is the enduring power of the existing cargo-driven socio-technical system, which underpins the system of marketing as described earlier. This has driven the cost of transporting goods almost to zero, whilst also enabling manufacturing costs to be significantly reduced through much offshoring of manufacturing to where labour costs are much cheaper, although they do not remain cheaper forever in all possible futures. These are infrastructures and consumer cults at the periphery and the core – the cult of Macintosh springs to mind (Belk and Tumbat 2005). Anthropology is just as important in this area as marketing scholarship, as it provides accounts of sensitivities to cargo as it moved through other people's worlds: cargo cults in the USA, the Asia-Pacific and Africa.

By illuminating these complex networks and relationships within cargomobilities, we show that this system is not ineradicable, but instead that cargo could indeed be millenarian when the impacts of such intense movements on the climate are accounted for. Just as the container emerged as a key innovation for global systems of mobility, so too could other niche innovations replace, combine with or augment the cargomobility system in both mobility-rich and post-mobility worlds.

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